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A MONTANA WATER QUALITY PROGRAM ASSESSMENT

FOR

OIL AND GAS PRACTICES,

FOREST PRACTICES

AND

SUBDIVISIONS

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INTRODUCTION

The quality of Montana's water faces threats from many directions. With the growth of Montana's population and the increased demand on the state's available natural resources, diminished water quality is often an end result. Research and monitoring reveal that many activities previously not regarded as dangerous to water quality are in certain instances very real threats. Examples include abandoned and leaking underground gas storage tanks, improperly designed or sited mine tailings ponds, oil and gas reserve pits, subdivision development, inadequate central sewage treatment plants, and improper forest practices.

Source of the Problem

There are significant discrepancies in the capabilities of Montana's water quality program regarding these activities. These discrepancies are substantially because of the point or non-point character of the pollution source.

The specific location of point source water pollution allows relatively easy monitoring, and because of the concentrated source, pollution can often be isolated and remedied. Central sewage collection and treatment systems are the largest point source dischargers in the State. Industrial discharges follow, with certain mining operations and livestock feedlots rounding out the major point source dischargers.

Perhaps because of excesses attributed to more populated and industrial sections of the United States, the Federal Clean Water Act

focuses heavily on point source regulation. Modeled after the federal statute, Montana's Water Quality Act also gives comprehensive treatment to point source discharges. Substantial sums of money have been consistently made available to state programs meeting EPA standards for central municipal wastewater treatment systems. No other section in the Water Quality Bureau receives the federal funding authority given to the Construction Grants section. The Water Quality Bureau's construction grants section annually issues $12 million in federal funds to qualified municipalities. In contrast, its Subdivision Review section has an annual budget of $198,736 for FY 1986, of which $61,949 will be returned to local governments. Table 1 provides the Water Quality Bureau's budget by program for FY 1986. It is significant that only 20% in Montana general funds goes to these programs and close to 75% of the Bureau's entire budget concentrates on point source problems. Nonpoint source water quality problems receive barely $200,000 of the Bureau's funds, or slightly over 10% of their entire budget.

Table 1 FY 1986

Program	Earmarked	Federal	General	Total
Subdivisions	$ 61,949[1]		$136,787	$ 198,736
Water Quality Management**		(EPA205j) 107,012	94,535	201,547
Water Pollution Control*	--	(EPA205g,106) .373,576	72,000	445,576
Construction Grants*	--	(EPA) .338,055[2]	--	338,055
Waste Water Operator	19,439	--	--	19,439
Groundwater	--	(EPA106) 92,778		92,778
Safe Drinking Water*		(EPA) 292,312	97,437	389,749
Clark Fork Study		(EPA106) 93,044		93,044
Cabin Creek (biennial)		(EPA106) 95,000		95,000
Water Marketing	25,000[3]			25,000
	$106,388	$1,391,777	$400,759	$1,898,924

[1]These are spending authority dollars based on historic estimates of subdivision review fees that are returned to local governments.

[2]This figure does not include the approximate $12 million federal EPA funds which Construction Grants authorizes to municipalities.

[3]$20,000 of this figure comes from the Montana Department of Fish, Wildlife and Park's budget.

Nonpoint sources of water pollution are much more difficult to define. They result from a variety of land use activities, lack specific discharge points, are difficult to monitor, and often cross local, state, federal and private jurisdictions. However, these activities encompass large land areas and their impacts often go undetected, sometimes for many years.

Legal Authority

The Federal Clean Water Act calls for efforts to control nonpoint sources of water pollution. Section 305(b)(1)(E) of the Federal Clean Water Act requires an annual water quality report from each state containing, among other things, "a description of the nature and extent of nonpoint sources of pollutants, and recommendations as to the programs which must be undertaken to control each category of such sources, including an estimate of the costs of implementing such programs."

Montana law does not specifically state a nonpoint source strategy. Montana's Water Quality Act (MCA 75-5-101) states that it is the policy of the state to: "(1) conserve water by protecting, maintaining, and improving the quality and potability of water for public water supplies, wildlife, fish and aquatic life, agriculture, industry, recreation, and other beneficial uses; and to (2) provide a comprehensive program for the prevention, abatement, and control of water pollution." Montana law also has a "nondegradation" policy (75-5-303) which requires (1) "that any state waters whose existing quality is higher than the established water quality standards be maintained at that high quality..." and requires (2) ...development

which would constitute a new source of pollution...to provide the degree of waste treatment necessary to maintain that existing high water quality."

These sections appear to address nonpoint sources as well as point sources, but Section 75-5-306(2) of the Act clouds a nonpoint source mandate with the following definition: ""Natural" refers to conditions or material present from runoff or percolation over which man has no control or from developed land where all "reasonable" land, soil and water conservation practices have been applied." The administrative rules further weaken a nonpoint source strategy. ARM 16.20.701(b)(i) states "Changes in surface water quality, or groundwater quality...resulting from lands where all reasonable land, soil and water management or conservation practices have been applied are not considered degradation." Neither the MCA nor the DHES' rules define "reasonable", leaving it up to the various agencies and land use managers to adopt management practices according to their individual definitions.

Understandably, nonpoint sources are more difficult to regulate because of their diffuse character. The Water Quality Bureau, the principle agency assigned by the Governor to preserve Montana's water quality, has programs to address diffuse sources, but they receive only a small fraction of the funds that are available to regulate point sources of pollution. These constraints, and the lack of a clear nonpoint source policy in state and federal law, result in limited efforts by the Water Quality Bureau in the nonpoint source areas.

Nature of the Problem

The success of Montana's water quality program often depends upon the nature of the problem and how easily it lends itself to solutions. Municipal wastewater treatment presents largely a technical and financial problem. Engineering solutions are generally available and three-fourths of the funding is provided by the federal government. Leaking underground storage tanks, until the passage of recent legislation, posed a jurisdictional problem. Inspection policy varied from county to county, the fire marshals responsible often lacked training in the water quality field, and no single state agency held oversight responsibility. HB 676 has largely corrected this by giving the Department of Health and Environmental Sciences Hazardous Waste Management Bureau the oversight function. Oil and gas activities face a similar jurisdictional problem. The DHES which is mandated to protect the quality of the state's waters, is not involved in their permitting process. The state permitting body, the Board of Oil and Gas Conservation, lacks experts in water quality because it is principally concerned with production.

Subdivisions and forest practices bring to mind problems of a legal/administrative nature. Subdivision review under the Subdivision and Platting Act is often avoided because of exemptions specified by law. Forest practices are not directly regulated by statute, and thus are subject to varying concerns for water quality impacts depending on the state, local or federal jurisdiction.

The political aspect of these problems poses a formidable barrier. Large factions of Montana depend heavily on these activities for their economic well-being. Many Western Montanans fear that

efforts to mitigate water quality impacts arising from logging activities will further weaken an already shaky economy. Many Eastern Montanans do not want oil and gas activities regulated to the point where they might discourage prospective drillers. Real estate interests throughout the state do not want over-regulation of the land subdivisions. Water quality mitigation measures can often reduce the profit margin on tracts of land slated for development.

Funding may present the greatest roadblock to Montana's water quality program. Substantial funds are needed to document water quality problems. This requires monitoring, testing, field inspection and other data collection related work. Nonpoint sources of water pollution usually require far more data collection because of their diffuse nature. Groundwater contamination from oil and gas and subdivision activities is hard to detect and often not apparent until long after the activity has eased.

Funding shortfalls especially restrict compliance capability. The Subdivision Review Section typically faces a backlog of over 50 violations that overwhelms its manpower, time and legal capabilities. Training programs for county sanitarians, logging operators, and builders are restricted by limited funds, as are field inspections in these areas. Because programs are limited by funding, the Water Quality Bureau is forced into a reactive mode where it must wait until violations are reported and then pursue a remedial course as the limited documentation allows.

The funding problem becomes more apparent when compared to the broad language in the state and federal law. The federal Clean Water Act and Montana's counterpart can be interpreted to require adherence

to water quality standards that touch virtually every man-related activity. A water quality program that assured strict compliance with these laws would mean a large commitment of funds, and changes in either the rules or statutes.

As the state agency designated by federal and state statute to protect and enhance Montana's water quality, the Water Quality Bureau must make every effort to push for its needs, whether they are political, legal or financial in nature. The program currently has an excellent reputation in several areas. It is not coincidental that these areas are adequately staffed and funded. Perhaps the time and energy required to press for better compliance capability lies beyond the scope of Water Quality Bureau activities. Certainly a concerted effort must be undertaken by local interests, the legislature, and the executive hierarchy to supply the water quality program with the political, financial and legal tools vital to its program success. The Bureau must, however, actively promote the need for these tools, as it knows best what these needs are.

Case Studies

This report does not provide an analysis of all aspects of Montana's water quality program. Rather, it focuses on three areas considered politically controversial, difficult to program, and important in terms of their present and future impact on Montana's water quality. A 1984 EPA Nonpoint Source Report to Congress listed nonpoint sources of water pollution as the major threat to the nation's water quality. The three areas analyzed for their impacts on Montana's water quality are subdivision review, oil and gas reserve

pits, and forest practices. These areas are considered nonpoint sources of water quality degradation, and they share problems that their diffuse nature seems to generate.

OIL AND GAS RESERVE PIT RECLAMATION

Oil and gas reserve pit reclamation practices emerge as possible threats to groundwater quality. Although covered under the broad mandate of the state's Water Quality Act, rules and regulations governing these activities with respect to groundwater impacts do not guarantee success in minimizing water quality degradation.

Oil and gas drilling practices lie under the authority of the Board of Oil and Gas Conservation. The Board promulgates rules and regulations, directs the staff, and conducts field inspections. Its duties primarily address oil and gas production and exploration methods, but it also is mandated by law to direct drilling and reclamation practices in such a manner that will not degrade groundwater or surface water quality.

> "The operator of a drilling well shall construct his reserve pit in a manner adequate to prevent undue harm to the soil or natural water in the area. When a salt base mud system is used as the drilling medium, the reserve pit shall be sealed when necessary to prevent seepage." 36.22.1005 ARM.

(1) "Salt in brackish water may be disposed of by evaporation when impounded in excavated earthen pits which may only be used for such purpose when the pit is underlaid by tight soil such as heavy clay or hardpan.

(2) Where the soil under the pit is porous and closely underlaid by a gravel or sand stratum, impounding of salt or brackish water in such earthen pits is hereby prohibited.

(3) The Board shall have authority to condemn any pit which does

not properly impound such water.

(4) At no time shall salt or brackish water impounded in earthen pits be allowed to escape over adjacent lands or into streams." 36.22.1227 ARM

"The owner of any well...shall...restore the surface of the location to its previous grade and productive capability and take necessary measures to prevent adverse hydrological effects from such well..." ARM 36.22.1307

These rules derive from the law, which states that

"The board shall...(a) require measures to be taken to prevent contamination of or damage to surrounding land or underground strata caused by drilling operations and production, including but not limited to regulating the disposal of salt water and oil field wastes;" 82-11-111 MCA and

(4) the restoration of surface lands to their previous grade and productive capability after a well is plugged or a seismographic shot hole has been utilized and necessary measures to prevent adverse hydrological effects from such well or hole".

82-11-123(4) MCA.

The Board of Oil and Gas Conservation's jurisdiction over groundwater impacts raises several questions. A 1981 Legislative Auditors Report on the Board's activities listed several areas of concern:

1) oil well field inspectors are not adequately trained in

monitoring potential groundwater impacts from nearby wells;

2) present trenching and lining procedures for reserve pits were found to be inadequate;

3) documentation was lacking on all counts of inspection - of 79 incidents reported, only four were investigated;

4) due to understaffing, inspectors were found to rarely conduct spot checks; their responses were exclusively to complaints;

5) in the areas of resource protection, location construction, and salt-based drilling, adequate numbers of field inspectors, adequate knowledge of water quality parameters, and adequate authority for remedial action were found to be lacking.

The Board's rules are part of the problem. Although a well owner must submit detailed abandonment reports, (see oil and gas rules 36.22.1601 et seq) field inspectors are not required to inspect a drilling site upon its abandonment or to inspect a restored reserve pit. (ARM 36.22.1301(2)) The number of Board of Oil and Gas field inspectors remains at seven; this small number does not insure inspections for all reclaimed reserve pits. The Board received authority from the Legislature to hire more field inspectors but has not done so.

Water quality data are not recorded on well driller's logs. Locations of water (Board rules Form 2) are duly noted, but aquifer characteristics are unavailable. Field inspectors, not trained in water quality concerns, do not feel that information available through mud-logging would pertinent for DHES or groundwater inventory purposes (personal communication Haughey, DNRC January 22).

Under present practices, field inspectors have no knowledge of groundwater contamination unless a nearby water well owner files a complaint. Many active and abandoned wells and reserve pits do not have water wells nearby; if groundwater contamination were to occur, no one would know without a monitoring system in place. Consequently, the isolated locations of many wells and infrequent field inspections suggest that groundwater contamination caused by oil and gas drilling practices is more widespread than presently documented.

Groundwater contamination (Groundwater 1984 Task Force report) is cumulative in nature. Contamination can spread through an aquifer for years, and groundwater assimilative capacities have been known to take very long periods - 30 to 50 years have been estimated - to absorb contaminants. Depending on geologic features, drilling activities using salt water muds could result in extensive, possibly irreversible aquifer degradation.

It is difficult to determine the extent of aquifer contamination and to predict the time it would take an aquifer to flush reserve pit contaminants. Specific information about recharge rates, groundwater flow paths, and values for storativity and transmissivity for the major aquifers in eastern Montana is unknown (Noble 1982). Evidence shows that wells drilled in 1955 are still generating leachates; although the extent of this damage is not known, it deserves attention.

Two recent studies* conducted on abandoned well sites in eastern Montana and North Dakota provide evidence of this problem. Verified with electrical resistivity soundings with adjacent wells, nine well sites showed plumes of contaminated groundwater extending in the

direction of the groundwater flow. These plumes showed excessive chloride levels compared to background data. The contents of the reserve pits at these abandoned wells had been buried on-site. These buried pits held drilling muds, cuttings and other associated salts and brines commonly used in the drilling process. Plastic pit liners are often used to prevent these materials from leaching into the groundwater, but these tear easily when the pit contents are compacted by a bulldozer. In addition, the frequently used trenching technique pushes the drilling muds off the lined pit bottom into unlined trenches. Once buried, pit wastes leach through the subsoil, aided by rainfall, snowmelt, and the transmissivity characteristics of certain affected aquifers.

The improper placement, construction, and reclamation of reserved pits can potentially contaminate extensive groundwater supplies for long periods (personal communication, Steve Pilcher, Kevin Keenan, Dick Peterson, WQB, 1/30/85). Because of a sharp drop in oil exploration activities in Montana and the more extensive use of reserve pits, the problem today is not as great as the situation of ten years ago in the Williston Basin. At that time reserve pits were generally not used, and numerous incidents were reported of salt brines being dumped with consequent damage to farm fields and water supplies. No changes in oil and gas or Water Quality Bureau authority have been made to avert a similar situation if oil and gas activities intensify.

Agency confusion over who is responsible for monitoring oil and gas activities with respect to water quality is part of the problem. On water quality matters, the Board of Oil and Gas Conservation staff

defers to the Water Quality Bureau. The Water Quality Bureau points to the principle jurisdiction of the Board of Oil and Gas. Because of the Board's current well drilling permitting procedure, the Water Quality Bureau specifically excludes oil drilling sites and reserve pits from their Groundwater Pollution Discharge Elimination System (GPDES) permitting program.

The potential for water quality problems resulting from oil and gas activities is great for several reasons. First, Board inspectors are not trained in water quality concerns. Second, Board rules do not expressly require pit liners or specific restoration techniques. The practice of trenching the reserve pits, squeezing their contents with bulldozers, and then burying them with native surface materials will not always prevent surface water or groundwater contamination. Finally, the infrequent inspections could lead to sub-minimum reclamation practices. The North Dakota study noted similar problems. "The field work for this report was done during the summers of 1980 and 1981. This corresponded with the peak of oil activity in western North Dakota. During this time the oil and gas field inspectors (at that time employed by the North Dakota Geological Survey and now employees of the Oil and Gas Regulatory Division of the Industrial Commission) were kept constantly busy by oil rig activities (i.e., the setting of surface casing, routine inspection, hold plugging, etc.) and had very little time to oversee pit reclamation. As a result of this understaffing a number of poorly maintained sites and improperly constructed reclamation trenches went undetected. In addition, the less viscous ("fluid") portion of the drilling fluid is supposed to be

removed from the pit prior to site reclamation. This did not occur at many of the reserve pit reclamations that were witnessed.

A number of these pit maintenance and pit reclamation problems have been corrected by an increase in oil and gas inspector personnel and by the recent decrease in oil activity in the state. The pit location is now subject to approval prior to construction as are the reclamation procedures upon hole completion."

Present permitting procedure limits initial Water Quality Bureau involvement. The Bureau has no control over drill site reserve pit placement, construction, and reclamation practices. Until the Bureau and Board of Oil and Gas coordinate their drill site permit procedures, oil and gas activities will continue to threaten Montana's groundwater quality.

Recommendations

1) A comprehensive groundwater inventory would enable the Water Quality Bureau to more effectively evaluate potential groundwater impacts and assist the oil and gas division in well placement and site decisions. Without a comprehensive state groundwater inventory, the extent of groundwater damage caused by reserve pit reclamation practices will not be known. The present practice of making few inspections and responding only to reported incidents places efforts to mitigate groundwater damage in a reactive mode. If comprehensive background data were available on groundwater characteristics, well and reserve pit placement and on or off-site burial decisions could be made from a more informed position. The Groundwater Information Center could gather this inventory of groundwater data.

2) The North Dakota and Dewey studies suggest changes in reserve pit reclamation procedures. Their procedures could require that reserve pits be lined with bentonite or a similar impermeable material. The use of bentonite in all pits would eliminate doubts about underlying soil characteristics. In plastic liners are used, they must be installed properly, and trenching practices would have to be changed to prevent tearing and to include lining the trenches. Fluids in the pits should be allowed more time to evaporate, reducing the chance of leachates reaching the substrata or surface water. Finally, the reserve pits should be "capped" in a conical fashion with an overlay of bentonite or similar impermeable material to prevent leaching through precipitation. Reserve pits should not be located in intermittent drainages, catch-basins, or near surface water supplies.

3) On-site installation and abandonment inspections should be mandatory. This will ensure adherence to pit placement and restoration procedures and consequently reduce the number of incidents reported and investigated.

4) The Water Quality Bureau should be included in the process. Oil and gas inspectors have no training in hydrology and presently, they call on Water Quality Bureau staff for expertise only when investigating incidents. The Water Quality Bureau has been designated the lead agency in Montana to protect and enhance the quality of its water. As the lead agency, it should take steps to assure that oil and gas drilling practices do not contaminate groundwater.

5) The Water Quality Bureau could train oil and gas field inspectors in water quality concerns. The Bureau could assist the inspectors in developing a checklist or handbook outlining proper

reserve pit installation, location and reclamation techniques. The Water Quality Bureau could then verify compliance with these practices through random inspections.

6) Oil and gas laws and rules could be revised to exempt oil and gas field inspectors and/or the Board from jurisdiction over water quality impacts arising from drilling and reserve pit activities. The Water Quality Bureau would adopt a permitting procedure under their groundwater rules for reserve pit practices. The Water Quality Bureau would be responsible for and have authority over, reserve pit construction, use, placement and restoration procedures as they relate to water quality. They will cooperate with the Board of Oil and Gas and their field inspectors on any concerns as they pertain to the Board's jurisdiction over other aspects of oil and gas production.

7) The Water Quality Bureau has a similar problem with the U. S. Forest Service and the Bureau of Land Management. These two agencies have jurisdiction over reserve pit and drill site practices on their lands, but neither have codified regulations on well site rehabilitation. They should adopt procedures consistent with the Board of Oil and Gas and give the same permitting authority to the Water Quality Bureau relating to water quality impacts.

FOREST PRACTICES AND THEIR IMPACT ON WATER QUALITY IN MONTANA

Nature of the Problem

Commercially marketable timber covers 20% of the land area in Montana. Contained in federal, state and private forests, this timber lies within watersheds representing virtually all the state's high quality headwaters. Consequently, state, federal and private activities in these forested watersheds can significantly impact the quality of Montana's waters.

The nature of water pollution arising from silvicultural activities is diffuse. Operations such as road building, pesticide and herbicide application, timber harvesting, and site preparation offer substantial water pollution potential. The amount of water pollution is dependent upon such factors as road design, extent of soil disturbance, and the time required until vegetative cover is re-established.

Sediment is the major pollutant resulting from forest industry activities. Erosion and consequent sediment delivery to water depends on soil type, slope, climatic conditions, the type of forest practices and the care with which these practices are undertaken. For example, improperly planned, constructed and maintained roads can contribute up to 60% of the sediment generation from forest lands.

State Silvicultural Programs

State water quality programs can address the nonpoint pollution from forest practices in several ways. Some states regulate silvicultural activities through individual forest practices acts. These states detail best management practices (BMPs) to be used, and enforce compliance. Some states rely on voluntary adherence to BMP's. These programs are generally

effective where technical assistance, local concern, education, and integrated water quality concerns in forest management procedures are present.

Almost all states use voluntary educational programs with or without a regulatory program. These programs are targeted to reach landowners, timber operators, and others involved in silvicultural operations. Some states also provide incentive programs for managing silvicultural nonpoint sources. These programs commonly feature technical assistance and targeted cost sharing to achieve water quality goals.

Montana relies on voluntary conformance to BMPs by the forest industry. The Water Quality Bureau relies on cooperation and a written agreement respectively with State Lands and the U. S. Forest Service for adherence to state and federal water quality standards. The Bureau depends on voluntary compliance with the BMPs by timber operators on private lands.

Montana's Water Quality Bureau and the Division of Forestry in State Lands (nonpoint source manager on state lands) have cooperated in preparing a Forestry and Water Quality Training Program. This program identifies BMPs through a Forest Practices Handbook, and involves regional training seminars on how to implement BMPs. The training and educational aspects of the program have been limited. Regional training seminars sponsored by the EPA were poorly attended; funding expired in 1982. Explanations for this lack of concern include a de-emphasis on small landowners, resulting in their perception that following BMPs would provide no short-term benefits. This reaction led to inadequate concern for long-term reforestation and reharvesting.

Adherence to BMPs can save logging operators money. Properly constructed roads cost less to maintain, buffer zones along streams prevent

certain cleanup activities after logging operations are complete, and harvest locations, slash removal and seasonal road closures all encourage faster forest regeneration.

Although these practices are more often of a long-term benefit, small operators have few incentives to adhere to the BMPs incentives. Training and closer monitoring of their activities is needed. This can be accomplished through mandatory attendance of training seminars, financial assistance in road design and construction, and possibly small operators' subsidies upon successful adherence to stream buffer strips, road construction, and proper cutting methods.

Federal Silvicultural Programs

The Federal government owns over 50% of the commercial forest land in Montana. Forestry programs are conducted by USDA's Forest Service. The Forest Service controls timber cutting by private operators on these lands by regulating timber sales contracts. Under a mandate to fulfill national timber quotas (RPA, (FLPMA) Federal Land Policy and Management Act) and in response to a national policy to reduce government spending, the U.S. Forest Service has been forced to manage national forest land without adequate resources. Budgets for U.S. Forest Service programs relating to watershed protection, which may not be supported by sales from timber harvests, have been sharply reduced. Without adequate funds for water quality monitoring, the U.S. Forest Service is often unable to assess the impacts on water resulting from logging activities.

In Montana, the Statewide 208 Water Quality Management Plan designates the U.S. Forest Service as the nonpoint source management agency for national forest lands. The Water Quality Bureau and the Forest Service

maintain a cooperative agreement for this purpose. The cutbacks in watershed programs are jeopardizing the Forest Service's compliance with the agreement.

Forest practices are not effectively managed for water quality in Montana for several reasons.

1) First of all, Montana's water quality requirement for nonpoint sources of pollution depends on interpretation of rule ARM 16.20.603(11) which defines naturally occurring conditions as "those conditions or material present from runoffs or percolation over which man has no control, or from developed land where all reasonable land, soil and water conservation practices have been applied." "Reasonable" is not defined, but is construed to mean best management practices. Each federal, state, and local agency, and each private industry develops its own BMPs. Because there are no statewide standards for BMPs, the state water quality program must rely on general provisions of the state's Water Quality Act which prohibit the placement of pollutants in or near state waters, or would violate state water nondegradation standards. (75-5-101 et seq. MCA).

2) Secondly, for a voluntary forest practices program to work effectively, funds must be available for training/education, upgrading BMPs, monitoring water quality, and most importantly, providing incentives or inducements for small and large operators to follow BMPs.

3) Thirdly, Montana lacks a Forest Practices Act. Characterized by no standardized BMPs, no operator incentives, an insufficient training/education program, few monitoring and enforcement funds, Montana's current treatment of forest practices supplies little inducement or incentive for compliance with state water quality standards. A Forest Practices act would address these issues.

4) Fourth, the Water Quality Bureau lacks effective enforcement authority. Because its reliance on non-standardized BMPs and its miniscule staff, the bureau must rely on cooperation with state, private, and federal forest managers.

Montana and federal laws clearly state (executive orders 12088, 13072 and the Federal Clean Water Act) that federal agency actions must comply with state water quality standards. If the Water Quality Bureau found the U.S. Forest Service in violation of nondegradation standards, it could take appropriate actions under its authority to halt these activities. This is particularly crucial during the formation of the U.S. Forest Service Forest Plans, currently underway, many of which clearly state that their preferred alternatives would reduce certain standards of water quality by as much as 25%.

The Water Quality Bureau would prefer to maintain a spirit of cooperation with the U.S. Forest Service and Department of State Lands-who have jurisdiction over state owned forests on forestry matters. This may not be possible, as the U.S. Forest Service plans indicate actions contrary to the agreement. The Water Quality Bureau has no formal agreement with State Lands, making their conformance to state water quality standards even more tenuous.

The following examples illustrate problems associated with dependence on voluntary compliance to forest management practices.

Examples where voluntary compliance with Forest Practices is not working.

A. Jack Creek

Burlington Northern and the Forest Service have, forest properties arranged in a checkerboard pattern in the Gallatin drainage. There are indications that BN's logging activities have increased water yield and

associated sediments to Jack Creek by 20% above pre-exisiting levels. This activity violates Montana's nondegradation standard which states that "any state waters whose existing quality is higher than the established water quality standards be maintained at that high quality" (75-5-303.(1) MCA.) Bn claims it ws following accepted management practices.

B. Swift Creek State Forest/Whitefish/Haskill Basin Drainage

Swift Creek periodically receives large sediment pulses from naturally occurring clay bank erosion. Although logging activities upstream do not directly generate excessive sediments, their increased water yield contribution adds to the problem. Standardized BMPs and a comprehensive Forest Practices Act could reduce this input.

C. Lake Mary Ronan

Burlington Northern extensively clear cut forests along thes west side of Lake Mary Ronan in the mid 1960's. The additional phosphorus-containing sediments resulting from the increased runoff on the clearcuts greatly accelerated Lake Mary Ronan's trophic deterioration. The added sediments caused extensive algal blooms, foul odors, and generally poor water quality. Burlington Northern spent hundreds of thousands of dollars to correct the problem, but Lake Mary Ronan still suffers water quality problems.

Examples of States with a Forest Practices Act

Several states have installed forest practice acts. Highlights of their experience could sharpen the focus on Montana's forest practices.

Idaho

Idaho enacted a forest practices act in 1974. The act gives Idaho authority over state and private forest land, but not federal forests. The Board of Land Commissioners was instructed to adopt rules designed to

formulate best management practices for forest activities. They were assigned a technical committee consisting of private landowners, timber owners engaged in forest practices, private logging operators, and the general public.

Idaho's Forest Practices Act was initially ineffective. Although BMPs were promulgated, the Department of State Lands did not have sufficient staff for field inspections, training programs and enforcement actions. Because of these shortfalls, Idaho recently added a substantial number of personnel to their forestry division and revised their forest practices rules to tailor their BMPs more closely to a variety of forest activities and conditions.

Oregon

Oregon passed a Forest Practices Act in 1971. Initially, Oregon wanted to regulate federal forest practices with its act. Citing federal and state law, Oregon's attorney general issued an opinion favoring state jurisdiction over federal forest practices. The U.S. Forest Service threatened a lawsuit to avoid compliance with Oregon's FPA. Wishing to avoid lengthy and costly litigation, Oregon withdrew its attempt. Like Montana, Oregon and the U.S. Forest Service presently have an agreement stating that the U.S. Forest Service must meet Oregon's water quality standards with the U.S. Forest Service's version of best management practices. Oregon forestry division personnel are generally pleased with U.S. Forest Service conformance to the agreement.

Oregon's Forest Practices Act is administered by its State Department of Forestry. Initially understaffed (as in Idaho's case), it now has 50 employees who conduct regular training seminars, site inspections, and enforcement procedures. The BMPs outlined in the Forest Practice Act and

its associated rules are regularly reviewed by a citizen's advisory committee and three agency technical review groups. The citizen's committee consists of private operators, land owners, and the general public.

Washington

The state of Washington passed a Forest Practices Act in 1974. Similar to Oregon and Idaho acts, the Washington act standardized BMPs for forestry activities on state and private forests, and provided enforcement authority. Permits are not required but a notice of forestry activity must be filed with the state board of forest practices. Field inspections are then conducted on a regular basis.

Washington periodically reviews its Forest Practices Act for its general effectiveness. A review team consisting of a water quality expert, private forestry industry representatives, a state forest practices manager, and a fisheries biologist make random site inspections to determine needs in the forest practices program. In a 1980 assessment, compliance was found to be 80% when practices were compared with the regulatory requirements. The 20% in non-compliance were the result of both operator and agency fault. Not surprisingly, the incidences of non-compliance with the act were noted as the most significant cause of forest-related water quality impacts. The state's periodic assessments allow upgrading of its BMPs and revision of the regulations to increase compliance and further limit impacts to water quality.

Conclusion

Washington, Oregon and Idaho experience forestry activities that are similar to Montana's forest industry. With varying degrees of success, all

three have Forest Practices acts that limit impacts of forest activities on water quality. They also supply funds for BMP review, enforcement, and training. All three have versions of a forest practices board to conduct these activities.

Montana entrusts the Department of Health and Environmental Sciences Water Quality Bureau with the tasks of monitoring froest activity for compliance with its water quality standards. The Bureau has one staff member working in this area. Funds for monitoring water quality affected by these activities are scarce. Training and educational programs are limited by funding constraints to a handbook on suggested BMPs and little else. The Department of Health and Environmental Sciences rules regarding forestry activities are vague. The Bureau must rely on voluntary cooperation from the Department of State Lands, private timber owners, and the U.S. Forest Service for compliance with the state and federal Clean Water Acts. These entities often lack either incentives or funding to insure forest practices that minimize impacts to water quality.

The extent of water quality deterioration resulting from forest practices is not clearly known. There are other examples in addition to the three mentioned, but more documentation is needed. This will require funding for monitoring, inspections and travel. If documentation shows that forestry practices in Montana have extensively impacted the quality of its waters, the state faces a choice. Presently faced with voluntary compliance, it can continue to accept less than satisfactory forest practices from state, federal and private operators, or it can pursue costly litigation measures, or it can adopt legislation to give the Water Quality Bureau clear direction and resources to effectively implement the objectives of the water quality law. In any case, Motnana should take

steps to assure that best management practices are standardized and implemented.

Introduction

A major purpose of subdivision review in Montana is to limit the impacts of subdivision growth on water quality. The administration of the law to insure environmental standards are met has been difficult. Limited by funding and manpower levels, legal exemptions and variations in local county review procedures, those involved in the review process are frequently confronted with inconsistencies, deficiencies and conflicting interests. Armed with a comprehensive law (the Sanitation and Subdivision Act) and constrained by exemptions in another (the Subdivision and Platting Act), these reviewers are challenged to provide for orderly development without infringing unreasonably on a landowner's rights.

Sanitation Act

Under the Subdivision and Sanitation Act, the DHES is required to adopt rules and sanitary standards which regulate any subdivision of land containing less than 20 acres. These rules and standards provide the basis for approving subdivision plats for various types of public and private water, sewage facilities and solid waste disposal. The rules relate to size of lots, contour of land, porosity of soil, groundwater level, distance from lakes, streams and other factors that may affect water quality.

Platting Act

The Subdivision and Platting Act directly affects the level of subdivision review and, as a result, Montana's water quality. The act's purpose statement includes the promotion of public health, adequate water supplies and sewage disposal, and development in harmony with the natural

environment. Provisions are made for local government reviews of major and minor subdivisions. Subdivisions are defined as a division of land which creates a parcel containing less than 20 acres, and exemptions are defined. These exemptions allow some developments to avoid the review process, and can cause adverse cumulative effects on water quality.

Rules

The DHES has adopted rules pertaining to their involvement in subdivision review (see ARM 16.16.100 through 16.16.805). The adopted review procedures detail sanitary and water quality protection measures for major and minor subdivisions. Local county review options are clearly stated, as the procedure for state review.

Approximately half of the state's counties have entered into contracts with DHES for the purpose of local review. This causes variations from county to county in the way review is conducted, most of which involve the level of training and the ability to conduct on-site inspections. Present rules do not call for a regularly scheduled training program, nor do they make provisions for state level on-site inspections. Montana's Subdivision Review Section consists of two reviewers and administrative support. Training seminars are occasionally conducted around the state, and travel to counties is limited to investigating incidents where other remedies have been exhausted.

1985 Legislation and Its Impacts on Review

The existing permit and contract system between the state and counties has not always proved adequate. The level of training and expertise varies greatly from county to county, and this is reflected in review procedure.

Two bills passed by the 1985 state Legislature attempt to correct elements of these review problems.

SB 415 and HB 633

SB 415 contains several key features. It would allow counties, at their option, to conduct their own subdivision review, to impose civil penalties for infractions and to accept ultimate responsibility for subdivision decisions in their counties. To receive this local option, the counties must demonstrate that their reviewers are qualified according to DHES rules, and they must conform to the provisions of the relevant Montana statutes. HB 633 provides the state Subdivision Review section with supplemental funds for an additional staff member.

Because SB 415 and HB 633 do not provide for funding levels necessary for training qualified reviewers either by state or the county, some individuals feel the bills are inadequate. Another concern is that SB 415 removes the potential for state supervision and, as a result, the state cannot act as a buffer between the county sanitarian and local pressures.

State review in both bills will be one step further removed from overseeing the proper application of state statutes. The civil penalties provision on SB 415 helps counties to enforce their review, but the state cannot intervene. This could lead to further discrepancies between counties over review procedure. Many counties do not feel that the one additional staff member provided by HB 633 will assure better state participation.

Most importantly, none of the 1985 legislation addresses the biggest issue facing subdivision review in Montana - The Subdivision and Platting Act exemptions. Under present policy, the cumulative effects of

subdivision activity are left for each county to evaluate the local impacts. Aquifer depletion, surface water and soil contamination, and other impacts of subdivision development often cross county lines. Subdivision review at the state level with a broader statewide view on environmental quality could more appropriately evaluate cumulative impacts than counties, whose review logically follows a more local perspective.

Enforcement

Montana's statutes (MCA) contain criminal and civil penalties for subdivision review infractions, but current policy precludes notice of subdivision infractions until problems/incidents are reported either by the local reviewer or others. Reports of this nature usually occur after water and sewer systems have been installed underground, and in many cases, after system users have taken up residence. (Will Selzer, Helena, personal communication, 1985.)

Enforcement can be initiated at either the county or state level, depending on the contract status of the county with the state. Only counties contracting with the state may adopt civil penalties. In the absence of civil penalties, the county must rely on the county attorney to take action against subdividers in review compliance. Faced with large case loads, many county attorneys do not give subdivision review evasion a high priority. (Jim McCauley, DHES, personal communication, 1985.) This leaves county sanitarians with the recourse of appeal to the state DHES for enforcement action.

The DHES Subdivision Review section in turn relies on DHES attorneys. Typically, the review section has a case load of 25 to 30 developed lots with sanitary restrictions still imposed. One staff attorney is available

Survey Results

Average of subdivisions per year for the past five years 1	responses	Contract with state for local review: yes	Contract with state for local review: no	ratio of on-site to public subdivisions (average)	does review take cumulative effects into account?	On-site inspections:		County sanitarian	REVIEW PREFERRED: state reviewer	REVIEW PREFERRED: developer's engineer	REVIEW PREFERRED: combination	NUMBER OF SUBDIVISIONS THAT ESCAPE REVIEW, WHICH EXEMPTIONS?: none	agriculture	mortgage	occasional sale	family transfer	over 20 acre	STATE REVIEW: very adequate	STATE REVIEW: adequate	STATE REVIEW: inadequate	STATE REVIEW: quicker state approval	SUGGESTED ASSISTANCE: training	SUGGESTED ASSISTANCE: on-site inspections	SUGGESTED ASSISTANCE: law revision	SUGGESTED ASSISTANCE: realtor education	SUGGESTED ASSISTANCE: communication	SUGGESTED ASSISTANCE: finance
Category one (20 or fewer per year)	28	12	16	15 to 1	major 1 minor 1 partial 16 none 10	17	11	14***	5	5	5***	16	6	2	1	3		6	13	9	10	5	7	3	5		
Category 3 (over 20 but less than 200)	9	5	4	9 to 1	major 4 minor 2 partial 3 none	7	2	6***	2	2	4***		1	1	5	6	5		4	5	6	9	9	5	1	3	1
Category 2 (over 200)	5	5		25 to 1	major 1 minor 1 partial 1 none 2	4*	1	1***			4***		2	1	1	2	1	1	1	3		4	2	3			2

1 of the 14 counties did not respond, 8 were in category 1, 4 were in category 2, and 2 were in category 3.

* one of these conducted for on-site for waste water only, another one did not inspect for public hook-ups.

** these counties prefer a state reviewer accompanying a developer's engineer for major subdivision review.

*** these counties would prefer review be conducted by a county sanitarian, on the condition that he was adequately trained.

Attachment A

QUESTIONNAIRE

Please return to: Bill Murdock
Environmental Quality Council
Capitol Station, Helena, Montana 59601

Name of county:
Name of respondent:

1. Does your county have a subdivision permit system or a contract with Montana's Subdivision Review section of the state Water Qualilty Bureau?

2. Approximately how many subdivisions do you review per year, averaging the last five years? Please include major and minor subdivisons and total number of parcels.

3. Approximately what is the ratio of on-site individual water and sewage system subdivision applications to public water and sewer system hook-ups?

4. When reviewing plat applications for approval, what, if any, cumulative effects on the environment of each application are considered?

5. After plat approval, do you make on-site inspections to verify proper location and installation of on-site water and sewage systems or public hook-ups?

6. If so, do you feel that on-site inspections should be conducted by state reviewers, the developer's engineer, or the county sanitarian? Why or why not?

7. Because of certain exemptions, how many subdivisions escape review? What exemptions cause this?

8. Do you feel that subdivision review at the state level is adequate or inadequate? Please explain.

9. Do you feel that you could use more assistance in subvision review? If so, in what areas - level of state involvement, law revision, revised master plans, training, finance, etc.?

10. If there are other areas of subdivision review at the state or local level that need attention, please comment below.

11. Can you recall specific examples in your county where current subdivision review practices have not been satisfactory? If you can, please specify by naming the subdivision, location, principals involved and how it was rectified.

Five-year Subdivision Activity

COUNTY	Major Subdivisions plats/lots/acres			Minor Subdivisions plats/lots/acres			Cert. of Survey #COS/lots/acres			County Totals filings/lots/acres		
MONTANA TOTAL	**876**	**35154**	**37053.45**	**2486**	**6051**	**21826.26**	**6786**	**12296**	**65166.02**	**10148**	**53501**	**124045.73**
Beaverhead	11	377	332.48	22	41	140.62	80	104	461.36	113	522	934.46
Big Horn	7	323	213.11	9	17	13.79	53	79	334.25	69	419	561.15
Blaine	2	38	98.89	8	16	75.72	21	29	187.56	31	83	362.27
Broadwater	11	499	603.45	12	43	98.02	46	71	336.82	69	613	1038.29
Carbon	22	379	679.90	76	152	566.54	108	149	1048.40	206	680	2294.84
Carter	0			1	1	.5	2	3	5.0	3	4	5.5
Cascade	30	1561	2495.67	124	201	895.61	220	395	2381.08	374	2157	5773.26
Chouteau	0			2	2	13.32	12	16	46.73	14	18	60.05
Custer	13	576	292.43	24	67	131.69	20	23	104.84	57	666	528.96
Daniels	1	11	2.79	4	10	6.10	2	2	8.40	7	23	17.29
Dawson	18	678	387.04	11	17	46.22	55	62	253.92	84	757	687.18
Deer Lodge	2	65	72.0	13	32	60.76	26	37	205.22	41	134	337.98
Fallon	3	17	14.27	3	14	7.98	4	6	23.09	10	37	45.34
Fergus	6	273	249.19	26	48	100.53	34	41	187.80	66	362	537.52
Flathead	114	3966	2779.40	246	796	2320.06	1637	3180	16681.6	1997	7942	21781.06
Gallatin	88	3355	4949.46	143	356	951.69	369	627	3398.39	600	4338	9299.54
Garfield	0			0			1	1	3.38	1	1	3.38
Glacier	5	33	43.73	19	38	163.33	18	21	78.47	42	92	286.83
Golden Valley												
Granite	3	26	10.23	9	13	35.26	27	34	125.42	39	73	170.91
Hill	22	557	294.40	36	77	340.75	55	66	227.82	113	700	862.97
Jefferson	11	493	737.45	41	66	394.95	107	153	813.14	159	712	1945.54
Judith Basin	0			0			4	5	14.20	4	5	14.20
Lake	24	894	1223.13	62	172	582.29	368	603	3217.56	454	1669	5022.98
Lewis & Clark	48	3250	1923.43	132	289	1134.00	363	628	3278.48	543	4167	6335.91
Liberty	0			1	1	1.0	4	4	14.75	5	5	15.75
Lincoln	17	538	468.49	74	222	647.89	266	484	2710.05	357	1244	3826.43
Madison	10	253	550.60	39	137	720.52	94	129	754.14	143	519	2025.26
McCone	1	20	66.80	4	8	24.77	10	11	42.24	15	39	133.81
Meagher	0			5	22	92.86	7	11	89.13	12	33	181.99
Mineral	4	80	126.49	10	34	116.96	48	67	331.91	62	181	575.36
Missoula	98	4583	7612.17	340	700	2737.20	748	1802	9092.43	1184	7085	19441.80
Musselshell	0			1	3	4.31	2	2	20.71	3	5	25.2
Park	10	173	418.78	57	109	478.23	144	216	1114.24	211	498	2011.25
Petroleum												
Phillips	11	500	321.89	8	26	39.74	18	22	151.09	37	548	512.72
Pondera	3	63	47.06	10	19	28.85	12	18	84.56	25	100	160.47
Powder River	9	449	554.97	5	6	22.90	3	3	5.04	17	458	582.91
Powell	5	278	308.89	11	19	83.85	32	43	139.20	48	340	531.94
Prairie	0			0			2	2	2.02	2	2	2.02
Ravalli	39	1034	2220.54	442	1312	5463.68	585	1158	6809.64	1066	3504	14493.86
Richland	38	1058	645.39	55	128	463.68	108	141	453.97	210	1327	1563.04
Roosevelt	6	258	99.81	8	12	44.33	15	18	141.61	29	288	285.75
Rosebud	21	2651	933.97	17	44	174.28	26	37	154.84	64	2732	1263.09
Sanders	12	211	295.54	29	102	348.94	163	235	1232.83	204	548	1877.31
Sheridan	8	155	51.53	14	34	23.33	17	19	43.04	39	208	117.90
Silver Bow	9	413	91.89	47	66	251.84	97	214	673.63	153	693	1017.36
Stillwater	14	319	355.14	33	73	323.53	72	122	730.26	119	514	1408.93
Sweet Grass	0			7	18	77.35	32	34	103.93	39	52	181.28
Teton	5	98	187.93	30	37	187.63	33	38	165.85	68	173	541.44
Toole	0			10	13	30.23	5	8	28.16	15	21	58.39
Treasure	0			1	1	14.89	2	2	8.01	3	3	22.90
Valley	4	137	109.53	22	31	119.94	21	30	84.56	47	198	314.03
Wheatland	1	1	4.07	2	2	10.72	2	2	5.74	5	5	20.53
Wibaux	0			0			1	1	2.15	1	1	2.15
Yellowstone	110	4511	4179.52	181	404	1213.08	587	1088	6551.33	878	6003	11943.83

for the subdivision review section, and his time is billed to the section on an hourly basis. Enforcement actions are viewed as time-consuming and generally unsuccessful in addressing subdivision review problems. Because of the high costs of legal counsel, budget constraints and a shortage of personnel, enforcement actions are only considered when time and money permit. The section's two reviewers cannot recall when a single family dwelling unit was taken to court over a departure from subdivision review. Unless civil penalties are added for all counties, or state and county attorneys become more aggressive, enforcement will remain weak. It appears obvious that subdivision review violations under present policy:

1) often won't be caught until after construction or until problems occur,
2) are frequently not prosecuted,
3) often are not corrected, and
4) accelerate the cumulative impacts of subdivision growth in Montana's ground and surface waters.

Survey Results

EQC staff distributed a questionnaire to every county sanitarian or his equivalent in Montana in February 1985. Forty-two of the 56 counties responded accounting for approximately 40,000 subdivided lots of a 53,501 lot total over a five year period. (See survey questionnaire attached and EQC Eighth Annual Report p. 109). The questionnaire sought to identify the level of state-county interaction in subdivision review, current review practices, problems, exemptions and areas needing improvement.

Although half the counties have contracted with the DHES to perform local review, many do not make on-site inspections to verify submitted

plats. Major subdivisions receive even less local on-site review, as most county reviewers do not feel that they are adequately trained to inspect public water supply and sewage hookups. Consequently, a major subdivision's engineer is depended upon for an assessment and compliance with state laws.

The counties responding were divided into three groups: category one: 20 or less subdivisions per year average in the past five years, category two: over 20 but less than 200, and category three: over 200. The response included 28 counties in category one, nine counties in category two, and five counties in category three. On-site individual water supply and sewage disposal systems dominated the submitted applications for review; the average ratio of on-site to public systems for all counties was about 15 to 1. Twenty of the 40 counties responding conducted on-site inspections for minor subdivisions. These counties generally relied on their county sanitarian to perform the review, but 14 counties depended on either the developer's engineer, state reviewers or both when conducting major subdivision review.

Exemptions under the Subdivision and Platting Act were listed as the principle reason for inadequate consideration of the cumulative effects of subdivision development. Category one respondents mentioned the family transfer, agricultural, mortgage, and occasional sale as exemptions that caused some lots to escape review. But they added that most plats, at least on an individual basis, were reviewed under the Sanitation and Subdivisions Act.

The Platting Act exemptions posed a greater problem for category two and three respondents. Most of these counties listed the over 20 acre, family transfer and occasional sale as exemptions causing significant

problems in the review process, both for cumulative effects and individual plat accuracy.

Category one counties review few minor subdivisions and even fewer major ones. On the other hand, category two and three counties face up to 30 times as many plat applications. Consequently, more subdivisions escape review. This large variation in subdivision activity among Montana's counties makes standardized review difficult. The sparsely populated counties cannot afford large, highly qualified review personnel. The more populated counties can afford well-trained staff, but the increased subdivision infractions often exceed their capabilities.

Inadequacies in present level of subdivision review were identified by a large majority of questionnaire respondents. Most often listed were the need for:

1) removal of an engineer's conflict in interest;
2) better trained reviewers;
3) more on-site inspections by state, local or combination of authorities;
4) revision of the Subdivision and Platting Act and other statutes and regulations;
5) more coordination and communication between the state and counties;
6) more county attorney/local reviewer coordination;
7) better county clerk and recorder/local reviewer coordination;
8) a buffer between county reviewers and local pressures;
9) an education program on review for realtors, land owners and developers; and
10) more funding to enable all of the above and,
11) more consideration of the cumulative impacts of subdivisions.

Engineers' Conflict in Interest Potential

Most developers employ licensed engineers for public sewage and water, multiple family hookups and major subdivisions. The engineer is qualified to review plat locations, oversee installation and determine a system's workability, and is typically present during most of a subdivision's preliminary design and construction phase. Thus the state and many county sanitarians expect the expertise and the reputation of the engineer to assure proper location, installation and system adequacy.

This reliance creates concern for both the state reviewers and many of the counties surveyed. First, engineers are primarily concerned with a system's workability. A smoothly functioning system may efficiently supply water and dispose of sewage, but may not necessarily prevent water supply depletion, soil or aquifer contamination, or minimize cumulative effects of several subdivisions on nearby water resources. Second, a project engineer is on the subdivision developer's payroll. This can present a conflict in interest, and may outweigh engineering considerations. Third, developers often do not retain an engineer after a project's preliminary stages. Coupled with the Subdivision and Platting Act exemptions which can cause drastic variations from an engineer's original subdivision conception of development, premature dismissal of an engineer decreases the prospect for adequate subdivision planning. (See example Prairie sub?)

In summary, engineers are highly qualified for technical subdivision review, and local government review can benefit from their involvement. But the existing review policy at the state-level and frequently the county-level does not guarantee that government concerns will be successfully met.

Examples

Some specific examples are illustrate the nature of some of the problems facing Montana and its present subdivision policy. The examples facing Montana and its present subdivision policy. The examples reflect administrative, legal, technical and social problems associated with the present state of subdivision review and development in Montana.

How A Developer's Engineer Can Face Conflict in Interests

Flathead County

The Kokanee Bend subdivision near Columbia Falls experienced engineering problems because its water system was not installed according to the approved plans. Key elements of the system, such as the storage tank, were not constructed. In addition, roads were not improved as required, and the developer disappeared. The county had not required an improvement guarantee because it relied on the engineer's expertise. Faced with no recourse, the homeowners sued the county for the necessary improvements.

Another example concerned the Meadow Hills subdivision of Kalispell, where once again the developer did not install the water system according to improved plans. The engineer who designed the system would not certify that the system had been installed as required. The developer fired the first engineer and hired another engineer who subsequently certified proper installation. Homeowners experienced a variety of problems including leaky pipelines and a leaky storage tank. A third engineer hired by the homeowners examined the existing system and noted many discrepancies between the plans and actual construction. Legal action was taken by the

state to force system correction, but an award is not likely to cover costs.

The Greenacres subdivision near Kalispell also experienced engineering-related problems. The subdivision was created in phases, the first phase being approved in 1976. Groundwater was reported by the developer's engineer to be non-existent or sufficiently deep so that problems would not occur. Problems did occur, however, as homeowners experienced flooded basements, sluggish drainfields, leaking waterlines corroded, and some residents contracted giardia. A moratorium has been placed on the installation of septic systems in the development; recent phases have been connected to Kalispell's sewer system. The homeowners have sued the state, county, developers, realtors, builders and lending institutions. The homeowners contend that all these parties knew or should have known of the shallow groundwater conditions.

These Flathead County examples of subdivision review problems because of engineering practices may be exceptions to the rule. Certainly, engineers are highly trained and the majority value and uphold their reputations. The subdivision review problems are not because of an engineer's lack of expertise; instead, they arise from the conflict of interest when the engineer in the developer's employ is depended upon for review.

Training

Virtually all of the survey respondents noted a need for more training in subdivision review at the county level. This would better enable local officials to evaluate a developer and/or an engineer's proposal, ensure proper water and sewer system placement and installation, and would help in

minimizing the cumulative effects of subdivision development. The larger counties (in terms of numbers of subdivided parcels) did not suggest more training as often as the smaller counties. This is explained by their larger staff capacity and ability to hire more qualified local reviewers. Most counties would prefer to see subdivision review take place at the local level, but they emphasize that this must only be done by fully trained [sanitarians] (reviewers). The few counties that advocate engineer or state review do so because of their perception of the inadequate training and expertise at the county level.

On-site Inspections

Many of the current problems associated with present subdivision review policy revolve around on-site verification of the submitted plats, system location, and installation. The majority of counties surveyed felt that the county sanitarian should conduct such on-site inspections, especially for individual systems. Most counties preferred either state reviewers, developer's engineers, or both to inspect multiple family or public system hookups. Because the state rarely makes on-site inspections and developer's engineers are seldom used, present state policy assumes review will be adequately carried out at the county level.

Buffer

The success of subdivision review at the local level depends on several factors, an important one being the ability of the local reviewer to make decisions on proposed subdivisions free from developer or other

local pressures. The availability of technically qualified state reviewers who are removed from the pressures of the local situation permits the local reviewer recourse when subjected to these frequent pressures. Most counties surveyed viewed state involvement in subdivision review as a backup for local review only when and if the county wanted help. Most counties expressed dissatisfaction with the length of time state reviewers spent in returning to the county approved plats and their attention to plat details not deemed important by the local reviewer. These same counties, however, would routinely phone the state reviewers, in the presence of a demanding developer or engineer, to clarify or seek additional support for aspects of review. This reliance was more apparent in counties with more subdivided lot activity.

This state level buffer for local review authorities directly relates to on-site inspections. Many counties listed the need for more training for their subdivision reviewers and their dependence on state reviewers when faced with local pressures. Without on-site inspections conducted by state reviewers, this combination can lead to inaccuracies in plat submittals, improper water and sewer system installation, and, ultimately, could add unnecessarily to the cumulative impact on Montana's lands and waters.

Other Problems/Needs

Local reviewers face additional problems in subdivision development. Although the Subdivision and Sanitation Act comprehensively defines subdivision review procedure, lack of adequate enforcement capability, a small staff and significant differences in local reviewer's funding and expertise do not assure comprehensive review. Subdivision and Platting Act

exemptions and large variances from county to county in their approach to review add to the problem. These variances include the degree of cooperation between the county attorney who must prosecute subdivision offenders, the county clerk and recorder who record land transactions, and the county sanitarian or equivalent reviewing authority. Perhaps most important of all, present funding levels are woefully inadequate in terms of addressing these issues.

Examples

Specific cases are presented to illustrate the nature of some of the problems facing Montana and its present subdivision laws and policy. The examples reflect administrative, legal, technical and social problems associated with the present state of subdivision review and development in Montana.

How Cumulative Effects of Subdivided Land Escape Review

Rosebud County

Rosebud County activity illustrates the agricultural, mortgage and over 20 acre exemptions under the Subdivision and Platting Act very clearly. Through the mortgage exemption, 50% of the one and two-lot subdivisions used frequently are missed until the developer completes financing on the home. It becomes apparent that agricultural exemptions creating under 10 acre parcels of eastern Montana prairie range land are certainly not made for agricultural purposes.

The use of the 20-acre exemption reveals the most serious review problem. Several areas in the county have witnessed someone purchasing 160

acres, creating eight 20-acre parcels, then selling them to eight people. Each of these eight owners then gives a five-acre tract to a family member, uses an agricultural exemption on one lot and an occasional exemption on another five-acre tract, and keeps another five-acre tract for themselves. This practice would allow 32 homes on 160 acres. Some of the five-acre lot owners further divided the land by creating a trailer court, or a minor subdivision, or by using one of the available exemptions. The practice has created entirely unplanned communities that amy have had sewer and water approval during initial development, but the cumulative effect of the additional lots has changed the circumstances under which the original approvals were made. About 50% of the divisions take place after sewer and water systems were installed, and four to five areas developed in this fashion. Widespread water and sewer problems are predicted within 10 years.

Unfortunately, the case of Rosebud County is not unique. Every growing county in Montana must operate under the Subdivision and Platting Act, and many have witnessed similar development.

How A Developer's Engineer Can Face Conflict In Interests

Flathead County

The Kokanee Bend subdivision near Columbia Falls experienced engineering problems. The water system for this major subdivision was not installed according to the approved plans. Key elements of the system, such as the storage tank, were not constructed. Roads were not improved as required, and the developer disappeared. Relying on the engineer's expertise, the county had not required an improvement guarantee. Faced

with no recourse, the homeowners sued the county for the necessary improvements.

In the Meadow Hills subdivision of Kalispell, the developer did not install the water system according to improved plans. The engineer who designed the system would not certify that the system had been installed as required. The developer fired the first engineer and hired another engineer who subsequently certified proper installation. Homeowners experienced a variety of problems including leaky pipelines and a leaky storage tank. A third engineer hired by the homeowners examined the existing system and noted many discrepancies between the plans and actual construction. Legal action was taken by the state to force system correction, but an award is not likely to cover costs.

The Greenacres subdivision near Kalispell also experienced engineering-related problems. The subdivision was created in phases, the first phase being approved in 1976. Groundwater was reported by the developer's engineer to be non-existent or sufficiently deep so that problems would not occur. Problems did occur, however, as homeowners experienced flooded basements, sluggish drainfields, waterlines corroded and leaked, and some residents contracted giardia. A moratorium has been placed on the installation of septic systems in the development; recent phases have been connected to Kalispell's sewer system. The homeowners have sued the state, county, developers, realtors, builders and lending institutions. The homeowners contend that all these parties knew or should have known of the shallow groundwater conditions.

The Flathead County examples of subdivision review problems implicating engineers may be exceptions to the rule. Certainly, engineers are highly trained and the majority value and uphold their reputations.

The subdivision review problems rise from an engineer's lack of expertise; they arose from the conflict of interest when the engineer in the developer's employ was depended upon for review.

Training

Virtually all of the survey respondents noted a need for more training in subdivision review at the county level. This would better enable local officials to evaluate a developer and/or an engineer's proposal, ensure proper water and sewer system placement and installation, and would help in minimizing the cumulative effect of subdivision development. The larger counties (in terms of numbers of subdivided parcels) did not suggest more training as often as the smaller counties. This is explained by their larger staff capacity and ability to hire more qualified local reviewers. Most counties would prefer to see subdivision review take place at the local level, but they emphasize that this must only be done by fully trained [sanitarians] (reviewers). The few counties that advocate engineer or state review do so because of their perception of the inadequate training and expertise at the county level.

How A Lack of Technical Training Can Disrupt Subdivision Review

Yellowstone County

The Prairie subdivision east of Billings demonstrates how a lack of technical training can cause subdivision deficiencies. This 20-acre tract was subdivided into 20 one-acre lots. Because of high precolation test results, water cisterns were installed to supply water. The state approved the submitted plat, because the water flow rate was determined acceptable,

and it was assumed the local reviewer had adequate knowledge of the area's soil and aquifer characteristics. The system failed within a year, and the county sanitarian appealed to the state for help. After visiting the site, the state reviewer correctly concluded that the subsurface soil composition could not sustain the installed system. Sanitary restrictions were reimposed, and prospective home builders are clamoring for a remedy.

Lewis and Clark County

The Highland Park subdivision of Helena was approved, but the soils were later found inadequate for subsurface systems. The situation was rectified by the county through granting variances and allowing special "fill system" on-site wastewater systems. Again, more training in soil characteristics at the local level would have prevented this situation.

Richland County

The Goss Schilling subdivision near Sidney suffers from a similar problem. The soil in the area is collapsing, causing home foundations to crack. This could have been prevented through more expertise in area soils.

How Cumulative Effect of Subdivided Land Can Escape Review

Rosebud County

Rosebud County activity illustrates the agricultural, mortgage and over-20 acre exemptions under the Subdivision and Platting Act very clearly. Through the mortgage exemption, 50% of the one and two-lot subdivisions are frequently missed until the developer completes financing

on the home. Agricultural exemptions creating under 10 acre parcels in eastern Montana prairie range land are certainly not made for agricultural purposes. (county sanitarian, Rosebud County, Feb., 1985)

The use of the 20-acre exemption reveals the most serious review problem. Several areas in the county have experienced purchases that have been divided into eight with subsequent sales to eight different buyers. Each of these eight owners cna then give a five-acre tract to a family member, uses an agricultural exemption on one lot and an occasional exemption on another five-acre tract, and keeps another five-acre tract for themselves. If taken to its maximum extent, this practice would allow 32 homes on 160 acres. Some five-acre lot owners further divide the land by creating a trailer court, or a minor subdivision, or by using one of the available exemptions.

This practice has created entirely unplanned communities that may have had sewer and water approval during initial development, but the cumulative effect of the additional lots has changed the circumstances under which the original approvals were made. About 50% of the divisions have taken place after sewer and water systems were installed, and four to five areas developed in this fashion. Thus, widespread water and sewer problems are predicted within 10 years.

Madison County

Madison County has suffered from the 20-acre exemption. Many sections have been divided into 20-acre parcels. After these are purchased, they are then divided into smaller parcels through occasional sales and result in major subdivisions that have not received proper review. Examples are Shining Mountains, Rising Sun Estates, Bear Trap Ranches, Elk Hills and

Mustang Ranches. Madison County does not feel raising the exemption (to 40 acres) would solve the problem. Instead, their reviewers suggest that the occasional sale application include a mandatory report on the surrounding land and parcels in the area.

Cascade County

This county has several examples of subdivisions that are reviewed peice-meal, i.e. one or two parcels at a time through occasional sales or family transfers. When reviewed this way the cumulative effect of the subdivision once it's totally developed is never adequately addressed. Further, the total time spent locally on each of these small subdivisions is many times what would have been spent if the subdivision had been reviewed as one large subdivision.

Buffer

The success of subdivision review at the local level depends on several factors, including the ability of the local reviewer to make decisions on proposed subdivisions without developer or other local pressures. The availability of technically qualified state reviewers permits the local reviewer recourse when subjected to these frequent pressures. Most counties surveyed viewed state involvement in subdivision review as a backup for local review only when and if the county wants help. Most counties expressed dissatisfaction with the length of time state reviewers spend in returning approved plats. State agency attention to plat details is not deemed important by the local reviewer. These same counties, however, routinely phone the state reviewers, in the presence of a demanding developer or engineer, to clarify or seek additional support

for aspects of review. (McCauley, DHES, 1985) This reliance is more apparent in counties with more subdivision activity.

On-site Inspections

Many of the current problems associated with present subdivision review policy revolve around on-site verification of the submitted plats, system location, and installation. The majority of counties surveyed felt that the county sanitarian should conduct these on-site inspections, especially for individual systems. Most counties preferred either state reviewers, developer's engineers, or both to inspect multiple family or public system hookups. However, the state rarely makes on-site inspections and developer's engineers are seldom used.

How Administrative Handling Affects Review

The examples highlight the need for closer state and county coordination. This can be accomplished by clarifying procedures, speeding up review time and conducting more frequent visits by the state to the counties.

Carbon County

A developer submitted an ES91A (a form for ?) on a four-acre lot purchased by a man who put money in escrow until the sanitary restrictions were lifted. The money was obtained by a bank loan. On the ES91A the question regarding low-lying wet areas was answered "no" correctly by the developer. The state reviewer wrote back from Helena requiring additional information by asking the question "are there any low-lying wet areas on the parcel?". The additional information was sent back to the state

reviewer stating again "no". The time frame for this extra paper work was three weeks, during which the buyer was being assessed $20 per day in interest on his loan. The restrictions were finally lifted, but at substantially more cost and time than necessary.

Another delay involved a developer's request to create a five-lot industrial minor subdivision on the parcel, which was reviewed and accepted by the Planning Board and Commissioners. Upon receipt of the ES91A form, the state reviewer required that a test well be drilled at the site to determine if adequate water for wells was available. When informed that this had already been done when the area was proposed for a landfill, the state reviewer said that he had to know the quantity of water available in addition to its availability. To avoid more costly test holes, the developer proposed to use cisterns. The state reviewer then denied the application because it had not been established that this was an adequate supply of water to allow cisterns. Working strictly over the phone out of an office in Helena, state reviewers have denied a landfill permit because water is too close to the surface and have denied a subdivision because the developer cannot prove that water is absent.

Toole County

The county reviewer lists several problems involving county interaction. Local assistance to county residents and developers is hindered by inadequate interaction with the state subdivision section. Notice of violations or discrepancies in plat submittals is often the only communication, and it is frequently too late to meet the 60-day deadlines. The delays are considered procedural in nature and could expedited by closer contact with the state.

Enforcement/Legal

The following examples reveal difficulties local reviewers encounter when they must depend on cooperation from their county attorneys. Under the present review system, counties must either go to the county attorney for a written complaint against an offender, or go to the state to seek enforcement remedies.

Lewis and Clark County

A developer wanted to build the Beartooth Bay Recreational Vehicle Park near Holter Lake. The developer's engineer noted sloping bedrock, which indicated inadequate drainfield potential. Despite this information, the developer installed a septic system and covered it before receiving county approval. The county signed a standard form with the state that limits local review to minor subdivisions only. According to the county attorney, the Beartooth Bay project was beyond the county's scope of review because it contained over six units. Meanwhile, the state approved the submitted plat, and then accused the county of inadequate review. The Beartooth Bay R.V. Park is in operation, the county cannot take legal action, and the state will not act.

Stillwater County

Dolan subdivision is an old development containing illegally built homes in violation of sanitary restrictions. It sits in a floodplain with high groundwater. The local sanitarian could not get the county attorney to rectify the situation, so the installed sewer and water systems remain.

Yellowstone County

The Hypark Subdivision, Block 3 Amended, exemplifies several difficulties facing local reviewers. After initial plat approval, the developer sold off lots without informing the buyers of the sanitary restrictions. Construction on many lots did not occur until several years after initial approval, and the original sewer and water systems proved insufficient.

The examples illustrate an array of problems facing the subdivision reviewer. A lack of training, inadequate coordination with other county offices, poor interaction with state reviewers and local pressures contribute to his difficulties. The current state fee structure falls short in supplying adequate funding for training and staffing. Both the low funding level and the present review policy preclude on-site inspections, the lack of which gives rise to many other problems.

A combination of random back-up inspections by state reviewers, more training for local reviewers, increased funding for these activities, and a revision of the Subdivision and Platting Act exemptions are needed to improve Montana's subdivision review process.

Subdivision Review - Conclusion

Subdivision review as it exists in Montana is often looked upon with disfavor. Procedural delays in plat approval, restrictions imposed after construction, technically unqualified local reviewers and ineffective enforcement authority contribute to this viewpoint. Perhaps most contributory, however, is the widespread use of the Subdivisions and Platting Act exemptions in order to escape review.

On the other hand, agricultural and other interests suspiciously view subdivision review as an infringement on their property rights. This view

surfaced during legislative debate over HB 727, when farm and ranch representatives expressed concern over the proposed local health board's authority to impose restrictions on their traditional land use activities. Development interests often share this position and oppose subdivision review because it hinders real estate development. Even individual lot owners, if they are not aware of the role of subdivision review in limiting impacts to water quality, often dispute the process.

One solution lies in educating Montana landowners on the merits of subdivision review. If it can be shown that a rancher's feedlot operation is causing high contamination of surface water or underground aquifers, he might not oppose restrictions so vehemently. The same might apply to developers and individual lot owners.

Some possible remedies:

1) Educational seminars on the subject of development growth and its impact on water quality could be offered to agricultural groups, realtors, developers, county commissioners and other involved parties;
2) Publications targeted to existing and potential developers and lot owners could be supplied addressing the obligations of ownership in terms of protecting the state's water quality;
3) A Speaker's Bureau consisting of members familiar with development impacts on water quality could be created to speak to various groups around the state; and
4) A general educational program could be offered to Montana's public. This could consist of seminars in high schools, publications distributed through public and private institutions, and television, newspaper and radio advertisements.

Each of these efforts should emphasize potential cumulative effects of subdivision growth on water quality. The effects of a single lot owner's actions often may not cause extensive harm, but the cumulative effects of many single lot owners can.

Other Recommendations:

1) Support the statewide Groundwater Information System proposed by the Governor's Groundwater Advisory Task Force.

- The aquifer data acquired could supply vital information on baseline characteristics; this would permit more informed decisions on subdivisions by identifying the extent and nature of their impacts.

2) Add civil penalties for subdivision review infractions to the present law, civil penalties available to all counties. This removes local review reliance on county attorneys who often do not have the time, funding, or inclination to prosecute subdivision violators.

3) Provide for comprehensive review before subdivision and construction occurs.

This alternative to strengthening enforcement capabilities can be accomplished by:

a) instituting an on-going in-county training program by the state;

b) conducting occasional on-site inspections, especially in the more active developing counties;

c) appropriating more funds for these activities.

4) Reexamine the state role as a buffer between the county reviewer and developer interests.

Even counties who elect to perform local review may desire state final approval or comment. A larger state staff would eliminate unnecessary procedural delays on plat approval. Through the on-going training program and frequent on-site inspections, the resulting closer coordination between state and local reviewers will reduce the developer pressures directed to the local reviewer.

5) Reexamine the exemptions in the Subdivision and Platting Act. The widespread use of these exemptions can prevent an adequate appraisal of the cumulative effects of development on an area's water quality.

6) Make provisions in the review process that would ensure cooperation between the county clerk and recorder, county attorney and local reviewer.

This would eliminate individual review exemptions, and it would strengthen a local reviewer's ability to enforce subdivision review compliance.

Those involved in subdivision review cannot hope for success without the support of the prospective lot developers they wish to influence. In order to gain this support, property owners and future builders must be shown how their activities, if conducted improperly, could adversely affect Montana's surface and groundwaters.